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(71) We GEEST INDUSTRIAL GROUP LIMITED, a British company of White House Chambers, Spalding, Lincs. PE11 2AL, and BRITISH INDUSTRIAL PLASTICS LIMITED, a British company of 20 St. Mary's Parsonage, Manchester M3 2NL, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:

The invention relates to load supports for pallets, stillages, roll pallets, trucks and the like, which are constructed so as to facilitate the mounting and demounting of at least one co-operable side frame. A load support such as this may comprise a deck mounted on support means which may constitute wheels, as in a roll pallet or trolley, or fixed legs, as in a stillage. In particular, the invention relates to a load support deck which is co-operable with at least one side frame comprising an elongate cross-member, at least one locking formation having a first portion extending along an axis which intersects the axis of the cross-member and a second portion which is radially spaced from the cross-member and spaced from the first portion in the longitudinal direction of the cross-member.

In the past, very many attempts have been made to devise load supports for example, for pallets, which can be easily fitted with a side frame, to facilitate packing of loads and to support the loads during movement, and from which the side frame can be easily removed to facilitate removal of the load. As disclosed in British Patent Specification No. 1 253 029, one expedient which has been utilised to achieve this object is the use of side frames having downwardly extending tubular projections which are received in apertures formed in the deck of a pallet. However, although it is intended that these side frames may be easily mounted and removed from the deck of the pallet merely by lowering the side frame into position or lifting the side frame off the deck of the pallet, these apparently simple operations are not so easily effected in practice. Thus, when an operator is holding a relatively large side frame, in order to lower it into position on the deck of a pallet, difficulty is often encountered merely in locating the tubular projections in the apertures provided in the deck of the pallet. Clearly, it is desirable to form the apertures so that they provide a relatively neat sliding fit for the tubular projections and so it is necessary to insert these projections into apertures which are approximately the same size as the projections. Moreover, even when one of the projections has been inserted into an aperture, it is not always easy to insert each of the other projections into their apertures because of the tendency of the first projection to bind in its own aperture as a result of non-axial insertion. If the apertures are increased in size, so as to avoid this difficulty, the side frames are no longer firmly supported on the deck of the pallet and, in addition, it is necessary to provide some additional locking means in order to prevent inadvertent withdrawal of the side frame from the pallet and this, of course, involves the necessity of performing a further operation both when mounting the side frame on the pallet and when removing the side frame. An example of this form of construction is given in British Patent Specification No. 1 042 227. This specification also discloses the use of a further expedient which is sometimes used in that the downwardly extending tubular projections are provided as parts of elongate sub-frames which are received in slots provided in or at the edge of the deck of the pallet. The side frames may therefore be slid laterally across the deck of the pallet and aligned, one at a time, with the longitudinal axes of the slots so that the sub-frames can then be moved axially of the slots into correct registry. As the sub-frames have a relatively large surface area for frictional engagement with the internal surfaces of the slots the slots can be appreciably larger than the sub-frames. The frames can therefore be lowered into position without the sub-frames binding on the internal surfaces of the slots to the same extent as tubular projections bind on the

internal surfaces of apertures formed in the deck.

In order to simplify the fastening of side frames such as this, various forms of clips were provided on the pallet deck for engagement with the elongate sub-frames provided on the side frames. Thus, as disclosed in British Patent Specification No. 1 166 080, resiliently deformable detent means were provided on the elongate recesses formed in the deck of the pallet for receiving the sub-frames and in British Patent Specification No. 1 291 274 there is disclosed a construction in which the elongate recesses provided for the sub-frames are internally shaped so as to ensure that the sub-frames can only be inserted or withdrawn when caused to travel along a meander path. Thus, by inserting the sub-frames in such a way that they engage automatically with internal retaining means, some success has been achieved in simplifying the operation of mounting and demounting pallet side frames. On the other hand, these expedients involve more costly construction than those earlier employed and, even though it is not necessary to ensure that a separate operation has to be effected to lock the side frames in place, difficulty is sometimes encountered in both mounting and demounting side frames in constructions such as this. One way to overcome this deficiency is to provide external latching means, as in British Patent Specification No. 1 201 824. However, although constructions such as this permit the side frames to be rested on the pallet, in a plane which is inclined to the load-bearing surface of the pallet, moved laterally until a cross-member forming part of the side frame is properly located on the deck of the pallet, and then rotated into a vertical plane where the sub-frames are engageable with the latch means, the latch means and the sub-frames are positioned outside the outer boundary of the deck of the pallet and so are subject to damage as a result of exposure to accidental blows.

In view of the inherent deficiencies of each of the expedients hereinbefore described, it has even been proposed, as in British Patent Specifications Nos. 1 222 897 and 1 385 431, to provide a pallet side frame with jacking means whereby sub-frames which are insertable in elongate recesses formed in the deck of the pallet are sprung into frictional or latching engagement with these recesses. The fact that resort has been made to this much more costly form of construction indicates clearly the continuous efforts which have been and are still being made in order to provide a pallet on which side frames may be easily mounted and demounted.

On further investigation, it is also clear that although there is a wide variety of load support constructions and side frames currently in use, a substantial proportion of the side frames in existence do have certain common constructional features. Thus, these side frames are normally provided with an elongate, normally rectilinear, cross-member, which may be rested on the deck of the load support as a preliminary step in locating the side frame, a first portion of a locking formation which engages with the deck of the load support so as to prevent rotation of the side frame about the axis of the cross-member, and a second portion of the locking formation which is spaced from said first portion, both radially of the cross-bar and in a direction parallel to the axis of the cross-member for engagement with some form of abutment to prevent vertical withdrawal of the side frame from the deck of the load support. Moreover, the first and second portions of the locking formation are commonly provided, respectively, by the distal or remote ends of at least one locking bar extending along an axis which perpendicularly interesects the axis of the cross-member and a retaining member extending laterally from said locking bar along an axis lying in the plane defined by the axes of the cross-member and said locking bar.

It is therefore an object of the present invention to provide a load support for co-operation with at least one such side frame and having means which readily permit the mounting and demounting of such a side frame. Clearly, the dimensions of such a load support will be dependent upon the side frames with which it is designed to be used and need not be limited to the dimensions of existing side frames.

According to the invention, there is provided a load support, for co-operation with at least one removable side frame comprising an elongate cross-member; and at least one locking formation having a first portion extending along an axis which intersects the axis of the cross-member and a second portion which is radially spaced from the cross-member and extends from the first portion in a direction having at least a component which is parallel to the longitudinal direction of the cross-member, characterised in that the load support comprises a deck which has a load-bearing surface and is formed, on at least one edge, with a rim portion having an upper surface forming a marginal portion of the load-bearing surface and an outer surface which faces away from the load-bearing surface; locating means are formed in the upper surface of the rim portion for locating the cross-member of one of said side frames; a recess formed in the rim portion extends from the load bearing surface for receiving at least the first portion of

the locking formation of one of said frames when the cross-member of this side frame is engaging the locating means; a rebate is formed in one side of the recess so that, when the cross-member of one of said side frames is engaging the locating means and this side frame is moved laterally by sliding the cross-member of the side frame along the locating means, the first portion of the locking formation of this side frame is able to move out of alignment with the recess and into the rebate to thereby limit rotation of the side frame about the axis of the cross-member; abutment means are formed in the rim portion so that, when the cross-member of one of said side frames is engaging the locating means and the first portion of the locking formation of this side frame is positioned in the rebate formed in the side of of the recess, the abutment means are co-operable with the second portion of the locking formation so as to prevent withdrawal of the first portion of the locking formation from the rebate in a direction which is inclined to the axis of the second portion of the locking formation; and a releasable catch is provided so that, when the cross-member of one of said side frames is engaging in the locating means, the releasable catch is capable of being put into and taken out of a locking condition in which it prevents lateral movement of this side frame by preventing the first portion of the locking formation of the side frame from being moved out of the rebate and into alignment with the recess.

The locating means may be conveniently formed as lip means, which extend along the rim portion of the deck so as to limit movement of the cross-member of the side frame towards the outer surface of the rim portion and, in a preferred embodiment of the invention, these lip means are provided by the outer edge portion of a groove formed along the upper surface of the rim portion of the deck for receiving the cross-member.

The first and second portions of the locking formation may be provided by the opposite ends of a rectilinear member extending obliquely of the axis of the cross-member. In this case, the releasable catch must engage the side frame in a manner other than by lateral abutment with the first portion of the locking formation, because this form of engagement would not prevent withdrawal of the locking formation along its inclined rectilinear axis. However, for normal side frame constructions, where the first and second portions of the locking formation extend along non-collinear axes and, more particularly, where the cross-member extends rectilinearly and the first and second portions of the locking formation are respectively provided by a locking bar extending perpendicularly from the axis of the cross-member and by a retaining member extending laterally from the locking bar along an axis lying in the plane defined by the axes of the cross-member and the locking bar, the releasable catch may comprise a latch member which is pivotally mounted within the recess provided for the first portion of the locking formation and an extension of this recess, on a pin which projects from the innermost surface of the extension of the recess, for movement into and out of a locking position in which the latch member is engageable with the first portion of the locking formation of a side frame mounted on the deck and positioned so that the first portion occupies the rebate formed in the side of the recess.

In practice, the cross-member of the side frame is normally rectilinear and so the locating means formed in the upper surface of the rim portion of the deck, for locating the cross-member, also extends rectilinearly. Thus, even where the load-bearing surface of the deck is not flat, the locating means provides a rectilinearly extending lateral support for the cross-member. Also, when the first portion of the locking formation is provided by a locking bar extending perpendicularly of the axis of the cross-member, the recess formed in the rim portion of the deck perpendicularly intersects the locating means and, in this case, the outer surface of the rim portion of the deck preferably extends perpendicular to the load-bearing surface of the deck.

In order to provide a secure fastening of the side frame to the deck, the locking may be provided centrally of the side frame. However, it is preferred that the side frame is provided with at least two spaced locking formations which may be arranged symmetrically of the central axis of the side frame. On the other hand, adequate results are obtained where the side frame comprises a rectilinear cross-member, at least two locking bars extending along spaced axes which perpendicularly intersect the axis of the cross-member so that at least one of the locking bars provides the first portion of a locking formation, and a retaining member extending laterally from the locking bar providing the first portion of said locking formation along an axis lying in the plane defined by the axes of the cross-member and said locking bar so as to provide a second portion of said locking formation which is radially spaced from the cross-member and spaced from said first portion in a direction parallel to the axis of the cross-member. In this case, the abutment means are co-operable with the or each retaining member, when the cross-member of one of said side frames is engaging the locating means and the locking bars of this side frame are

positioned in the rebates formed in the recesses, to prevent axial withdrawal of the locking bars from the rebates. Thus, although only one locking bar need form part of a locking formation having a second portion provided by a retaining member, it is preferred that at least two locking bars are provided with second portions of locking formations. In fact, in a preferred side frame construction, there is at least one pair of parallel locking bars extending along spaced axes which perpendicularly intersect the axis of the cross-member so as to provide, respectively, first portions of two locking formations, and a retaining member extends laterally between the locking bars of the or each pair of locking bars so as to provide, respectively, integrally connected second portions of the two locking formations. In this case, the abutment means formed on the rim portion of the deck for engagement with the or each retaining member extend at least part-way between the recesses formed in the rim portion of the deck for receiving the two locking bars between which the retaining member extends. The abutment means need not extend beyond the recesses provided for the locking bars of each pair. This is important because the abutment means for each retaining member are preferably provided by the side of a lateral recess formed in the rim portion so that the innermost surface of this lateral recess can support the side frame against rotation about the axis of the cross-member of the side frame.

It is clear that the invention is not limited to a load support which is co-operable with only one side frame, but is also concerned with load supports in which side frames are mountable on each side of the load support. In particular, the invention is concerned with a load support which is co-operable with side frames which are mounted on two opposite sides. In this case, the deck is formed on a further edge with a further rim portion having an upper surface forming a marginal portion of the load-bearing surface of the deck and an outer surface which faces away from the load-bearing surface of the deck, further locating means are formed in the upper surface of the further rim portion for locating the cross-member of one of said side frames, and the further rim portion is formed in a similar manner to the rim portion formed on the further edge of the deck.

In this case, the locating means and the further locating means may respectively comprise lip means and further lip means which extend respectively along said rim portion and said further rim portion of the deck and the load-bearing surface may include a planar portion extending between the lip means and the further lip means.

Where a load support in accordance with the invention is co-operable with two removable side frames which each comprise a rectilinear cross-member, at least two parallel locking bars extending along spaced axes which perpendicularly intersect the axis of the cross-member so that at least one locking bar provides a first portion of a locking formation, and a retaining member extending laterally from said one of the locking bars along an axis lying in the plane defined by the axes of the cross-member and said one of the locking bars so as to provide a second portion of said locking formation, it is convenient to provide each side frame with two frame members which form extensions of said two locking bars, along axes which are collinear with the axes of the two locking bars, and with at least one additional frame member extending parallel to said two frame members along an axis which perpendicularly intersects the axis of the cross-member, the two frame members and each additional frame member being disposed on the opposite side of the cross-member to the locking bars, and existing side frames are commonly constructed in this manner. Thus, when a load support according to the present invention is provided with such side frames, on its opposite edges, the additional frame members of these two side frames would foul the outer surfaces of the rim portions of other load stacked mounted on the load support fitted with the two side frames. This fouling may be avoided by forming the rim portion on said one edge of the deck and the further rim portion on said further edge of the deck with notches which are laterally spaced from the recesses and further recesses formed for receiving the two parallel locking bars of two of said side frames by distances which equal the spacing between each additional frame member of one of said side frames and said two frame members of this side frame to which each additional frame member is parallel.

Although it is possible to form load supports according to the invention by fabrication of metal components, the structure of the load support lends itself to a moulding or metal casting technique and, for this reason, it is convenient to form the load support from plastics material. This plastics material is preferably in the form of an expanded, structural foam material having a cellular core and an integral skin and may include a reinforcing filler.

With moulded or cast constructions such as this, the load support comprises an upper layer, providing the load-bearing surface, an integral rim including the or each rim portion and having an inner surface, and intersecting reinforcement ribs extending from the opposite side of the upper layer to the load-bearing surface, between opposed

parts of the inner rim surface.

This form of construction provides a robut and durable load support which is capable of withstanding severe shock loading without fracture or permanent deforation so that the load support is not subject to the permanent distortion which is common when metal-frame load supports are mishandled. The load supports constructed in this manner therefore provide strength and duralibity with lightness and may be constructed in attractive colours. As the load support deck may be formed as an integral unit with a flat load-bearing surface which is free from crevices, indentations and protrusions, the load support is hygienic and easy to to clean and this is a factor of major importance for load supports used in handling foodstuffs. In addition, by forming the load support deck from a suitable expanded plastics, structural foam material, such as expanded polypropylene, it is possible to obtain a load support deck which is not effected by water, oils, fats, most chemicals and acids. The load support deck will therefore not corrode, rot, rust or splinter.

As hereinbefore explained, the load support deck may be mounted on support means which are attached to the underside of the deck and these support means may comprise either fixed legs or wheeled fittings. In both cases, it is convenient to provide at least one metallic reinforcement member, such as a length of structural-section steel, which is mounted between the underside of the deck and parts of a pair of support means, the opposite ends of each reinforcing means being clamped in position by the parts of the support means of each pair.

Where the support means comprise fixed legs, it is of course possible to provide these support means as integral parts of the moulded deck. However, where it is necessary to attach the support means to a deck moulded from plastics material, particularly an expanded plastics, structural foam material, for example where the support means comprise wheeled fittings, difficulty is encountered in effecting this attachment because of the nature of the plastics material.

This difficulty has been overcome in an ingenious manner.

Thus, the underside of the deck is formed with apertured bosses and the parts of the support means, such as mounting brackets, are attached to the deck by means of removable screw-threaded members which engage with complementary fixed screw-threaded members inserted into the apertured bosses. These fixed screw-threaded members may be formed with an external surface having protruding portions which are engageable with the internal surfaces of the apertures formed in the bosses to prevent both axial withdrawal from the apertured bosses and rotation within the apertured bosses. These fixed screw-threaded members may comprise internally threaded bushes or externally threaded studs which project from the apertured bosses. Where the fixed screw-threaded members constitute internally threaded bushes, it is important that these bushes be positioned so that their outer ends do not lie within the apertures formed in the bosses because, in this case, tightening a screw extending through a member seating on the outer end of the boss would tend to withdraw the internally threaded bush from the boss. It is therefore preferred that the outer face of the internally threaded bush stands proud of the outer surface of the apertured boss. Although it is thus possible to anchor the fixed screw-threaded members securely enough to prevent axial withdrawal, the operation of tightening the movable screw-threaded means by which the parts of the support means are attached to the deck frequently imposes sufficient torsional loading to cause the fixed screw-threaded members to rotate within the apertured bosses. However, it has been found that if these fixed screw-threaded members are provided with a sufficiently large, axially facing surface which is engageable with a member to be attached to the deck, this unwanted loosening of the fixed screw-threaded members may be prevented by frictional engagement between the axially facing surface and the abutting surface of the member to be attached, as this member is pressed against the axially-facing surface during tightening of the movable and fixed screw-threaded members. Clearly, where the fixed screw-threaded member consists of a stud projecting from an apertured bush, this stud may be provided with a peripheral flange which, on one side, provides the required axially-facing surface and, on the other side, provides an abutment for the outer face of the apertured boss so as to locate the stud in the boss. Similarly, even where the fixed screw-threaded member consists of an internally threaded bush which has a sufficiently large cross-section to provide the required axially-facing frictional surface, it is preferred that this bush is also provided with a flange which can abut the outer face of the apertured boss in order to correctly locate the internally threaded bush.

Thus, as the movable screw-threaded members are tightened on the fixed screw-threaded members, the parts of the support members or the reinforcement members are pressed against the axially-facing surfaces which are thereby subjected to frictional resistance sufficient to prevent unwanted rotation of the fixed screw-threaded mem-

bers.

Although it is useful, in some applications, to provide the deck with at least one metallic reinforcement member, such as a length of structural-section steel, which can be pressed against axially-facing surfaces of fixed screw-threaded members inserted into apertured bosses formed in the underside of the deck, where the deck is of moulded construction and the underside of the deck is formed with integral reinforcement ribs, there are applications in which other metallic reinforcement members are advantageous. Thus, it has been found that if an elongate metallic reinforcement member is clamped against spaced portions of one of the integral reinforcement ribs formed in the underside of the deck, it is possible to provide a stronger, more rigid construction which is much less costly. For example, each such reinforcement member can be clamped against an integral reinforcement rib by parts of the support means attached to the underside of the deck. In addition, the metallic reinforcement member may be of simple rectangular cross-section. This construction is more hygienic than where the metallic reinforcement member is of structural section, such as channel-section, in that it avoids the formation of dirt traps. Moreover, where the thickness of the metallic reinforcement member is the same as the thickness of the integral reinforcement rib against which it is clamped, the reinforcement member presents a more pleasing appearance. To improve the hygienic properties and also the appearance of the deck, the metallic reinforcement member may be provided as an insert in the moulding process by which the remainder of the deck is formed. However, this is not essential and adequate results are obtained when the metallic reinforcement is fitted to the remainder of the deck after the moulding operation.

Three embodiments of the invention are hereinafter described, by way of example, with reference to the accompaying drawings, in which:–

Figure 1 is an end elevation of a roll pallet, having a deck constituting a load support according to the invention, on which two side frames are attached;

Figure 2 is a side elevation of the roll pallet shown in Figure 1, illustrating more of the side frame construction;

Figure 3 is a perspective exploded view of the assembly shown in Figures 1 and 2;

Figure 4 is a plan view of the deck of the roll pallet, prior to attachment of the side frame;

Figure 5 is an underneath view of the deck of the roll pallet, showing the means provided for the attachment of support means such as wheeled fittings;

Figures 6 to 8 are sectional views across the sections VI-VI, VII-VII and VIII-VIII in Figure 5;

Figure 9 is a side elevation of a roll pallet, having a deck constituting a load support according to the invention, provided with two side frames which differ from the side frames shown in Figures 1 to 3, and carrying a number of stacked similarly formed roll pallets;

Figures 10 and 11 are plan and sectional elevation views of the deck of a second roll pallet according to the invention and correspond to Figures 4 and 7; and

Figure 12 is a sectional elevation view of part of the deck of a third form of roll pallet according to the invention and corresponds to part of the Figure 7.

As shown in Figures 1 to 3, a roll pallet 10 has a deck 11 according to the present invention of expanded polypropylene, structural foam material which is moulded with an integral rim 12 and mounted on support means in the form of two castor wheels 13A and 13B and two fixed-mounting wheels 14A and 14B. Two side frames 15A and 15B are mounted on rim portions 12A and 12B formed on opposite edges 11A and 11B of the deck 11 which, as shown in Figures 4 and 10, are provided with outer surfaces 12D and 12F.

As shown more clearly in Figure 3, each side frame 15A and 15B has a cross-member 16, two frame members 17, which serve as corner posts when the side frames 15A and 15B are mounted on the roll pallet 10, a top bar 18 extending between and integrally connected with the upper ends of the frame members 17, and four additional frame members 19 extending between the cross-member 16 and the top member 18. As also shown, each side frame 15A and 15B is provided with two pairs of locking bars 20, one locking bar 20 of each pair constituting an axil extension of one of the frame members 17. A retaining member 21 extends laterally between the locking bars 20 of each pair along an axis lying in the plane defined by the axes of the cross-member 16 and the two locking bars 20 to which it is attached.

As shown in Figures 2 and 3, a releasable catch 22A is provided on one edge 11A of the deck 11. This releasable catch 22A comprises a latch member 23 which is pivotally mounted on a pin 24 set into the edge 11A of the deck 11.

In order to mount one of the side frames 15A and 15B, for example side frame 15A, the latch member 23 must first be rotated into a vertical position. It is then merely necessary to rest the side frame 15A on the deck 11 with the cross-member 16 resting in a groove 25C formed in the upper surface 12C of the rim portion 12A which forms a

marginal portion of a flat load-bearing surface 26 of the deck 11. This is most conveniently achieved by leaning the side frame 15A so that the cross-member 16 rests against lip means 25A provided by outer edge portions of the groove 25C, the upper portion of this side frame lies over the deck 11 and the locking bars 20 are disposed in the upper portions of recesses 27A formed in the rim portion 12A and extending perpendicular to the flat load-bearing surface 26 of the deck 11. The side frame 15A is then rotated into a vertical position so that the locking bars 20 extend throughout the length of each recess 27A and the side frame 15A is moved bodily, by sliding the cross-member 16 along the groove 25C so that the locking bars 20 occupy rebates 28 formed, respectively, in one side of each recess 27A. The side frame 15A is thus secured against rotation about the axis of the cross-member 16 and is maintained in this condition merely by rotating the latch member 23 of the releasable catch 22A into a horizontal locking position in which it abuts an adjacent locking bar 20. Abutment means 29A, provided by the underside of the rim portion 12A extending between adjacent recesses 27A are arranged to bear against the retaining members 21 if the side frame 15A is lifted, thereby preventing withdrawal of the locking bars 20 from the rebates 28 formed in the recesses 27A.

As more clearly shown in Figures 4 and 5, the pin 24 pivotally supporting the latch member 23 of the releasable catch 22A projects from the innermost surface 30 of an extension 31 formed in one of the recesses 27A on the opposite side to the rebate 28 and this extension 31 is sufficiently large to enable the latch member 23 to be foot-operated. This means that the side frame 15A can be very easily mounted on the roll pallet 10 by an operator holding both sides of the side frame 15A and following the sequence hereinbefore described. Clearly, to remove the side frame 15A it is merely necessary to follow the equally convenient reverse sequence.

It is also clear that by constructing the further edge 11B of the deck 11 in a similar manner to edge 11A, a further side frame 15B may be easily mounted and demounted on the roll pallet 10. Thus, as shown more clearly in Figure 4, the deck 11 is formed on a further edge 11B which is opposite to the edge 11A, with a further rim portion 12B having an upper surface 12E forming a marginal portion of the flat load bearing surface 26 and an outer surface 12F which extends away from the flat load-bearing surface 26 so as to form an integral part of the rim 12 extending around the deck 11. A further groove 25D is formed in the upper surface 12E of the further rim portion 12B for receiving the cross-member 16 of another side frame 15B. Further recesses 27B are formed in the further rim portion 12B for receiving the locking bars 20 extending from the cross-member 16 of the other side frame 15B when the cross-member 16 of this side frame 15B is seated in the further groove 25D so as to engage further lip means 25B provided by the outer edge portions of the groove 25D. A rebate 28 is formed in one side of each further slot 27B so that, when the cross-member 16 of the other side frame 15B is seated in the further groove 25D and this side frame 15B is moved laterally by sliding the cross-member 16 of the side member 15B along this further groove 25D, the locking bars 20 of this side frame 15B are able to move out of alignment with the further recesses 27B and into the rebates 28 formed in the sides of the further recesses 27B to thereby limit rotation of the side frame 15B about the axis of the cross-member 16. A further releasable catch 22B, similar to releasable catch 22A, is provided on said opposite edge 11B of the deck 11 so that, when the cross-member 16 of side frame 15B is seated in the further groove 25D, the further releasable catch 22B is capable of being put into and taken out of a locking condition in which it prevents lateral movement of the side frame 15B by preventing movement of the locking bars 20 of the side frame 15B from being moved out of the rebates 28 formed in the sides of the further recesses 27B and into alignment with the further recesses 27B. Similarly, further abutment means 29B are formed on the further rim portion 12B so that, when the cross-member 16 of the side frame 15B is seated in the further groove 25D and each locking bar 20 of this side frame 15B is positioned in the rebate 28 formed in the side of one of the further recesses 27B, the further abutment means 29B are co-operable with each retaining member 21 so as to prevent axial withdrawal of the locking bars 20 from the rebates 28 formed in the sides of the further recesses 27B.

As also shown in Figures 4 and 5, the deck 11 is rectangular in shape and comprises an integral moulding of expanded polypropylene, structural foam material having an upper layer 32 providing the flat load-bearing surface 26 and a downwardly depending integral rim 12 having portions 12A and 12B on the longer opposite edges 11A and 11B. As shown in Figure 5, ribs 33 extending parallel to the edges 11A and 11B are integrally connected to the inner surfaces 12G of the rim 12 and to the under-surface of the upper layer 32 and intersect perpendicularly with ribs 34 which are integrally connected to the inner surfaces 12G of the rim 12 and to the upper layer 32. Four sets of apertured bosses 35 are also

integrally moulded in the underside of the deck 11 and supported either by the rim 12, the ribs 33 or by additional ribs 36 formed integral with the deck 11. These bosses 35 are formed with apertures 37 (Figure 6) for receiving internally threaded bushes 38 provided with flanges 39 which have axially-facing outer surfaces 38A and abut the outer surfaces 35A of the bosses 35. These bushes 38 receive screws 40 (Figure 6) to secure bracket parts 41 (Figure 6) for the wheels 13A, 13B, 14A and 14B and channel-section steel reinforcement members 42 to the underside of the deck 11.

As shown in Figures 5, 6, 7 and 8, the ribs 34 and 36 are relieved so as to receive the section of the reinforcement members 42 and the depth of the apertured bosses 35 from the upper layer 32 is chosen so that the flanges 39 of the internally threaded bushes 38 abut the facing surfaces of the reinforcement member 42 and the bracket parts 41 supporting the wheels 13A, 13B, 14A and 14B. To allow the castor wheels 13A and 13B to extend beyond the adjacent end of the deck 11, even when placed end-to-end with an abutting roll pallet 10, the castor wheels 13A and 13B are more widely spaced than the fixed mounting wheels 14A and 14B. The reinforcing members 42 are therefore arranged so that, at one end of the deck 11, they are attached to the outer apertured bosses 35 provided for securing the bracket parts 41 of the fixed-mounting wheels 14A and 14B and, at the other end of the deck 11, are secured to the inner apertured bosses 35 provided for securing the bracket parts 41 of the castor wheels 13A and 13B. As shown in Figures 6 to 8, the depths of the different apertured bosses 35 are such that the flanges 39 of the internally threaded bushes 38 are clamped between the outer surfaces 35A of the apertured bosses 35 and either by the bracket parts 41 of the wheels 13A, 13B, 14A and 14B or by the web portion of the channel-section reinforcement member 42 which, itself, is clamped in place by the bracket parts 41 of these wheels. In each case, connections are made by means of screws 40 which engage the screw threads formed internally of the bushes 38.

To strengthen the rim portions 12A and 12B against rotation of the side frames 15A and 15B about the cross-members 16, when the side frames 15A and 15B are pushed inwardly, over the deck 11, the bottom end of the rebates 28 formed in the sides of at least one recess 27A or 27B provided for each pair of locking bars 20 is blanked off by means of an integrally moulded part 43 of the deck 11. These rebates 28 may also be strengthened by means of "U"-shaped straps (not shown) which are embedded in the rim portions 12A and 12B with the legs of the straps extending along opposite sides of the rebates 28 and the cross-members of the "U"-shaped straps extending through the parts 43.

In an alternative form of construction, all of the rebates 28 have the same open ended configuration, but in this case the bottom end of the rebate 28 formed in the side of at leasteast one recess 27A or 27B provided for each pair of locking bars 20 is blanked off by means of an "L"-shaped strap (not shown) having a longer limb, extending inboard of the deck 11 and clamped in place by one of the bracket parts 41 of the wheels 13A, 13B, 14A and 14B, and a shorter limb extending upwardly from the longer limb so as to provide an outer abutment for the lower end of the locking member 20 positioned in the rebate 28 blanked off by the longer limb of the strap.

Figure 9 shows a roll pallet 10 constructed in accordance with the present invention and fitted with two side frames 15C (only one of which is shown) which is stacked with identical roll pallets 10 either for storage purposes or for transport.

As shown throughout the drawings, the rim portions 12A and 12B are formed with notches 44 which are each spaced from the recesses 27A and 27B provided for receiving the locking bars 20 which constitute axial extensions of the frame members 17 by distances 45 and 46 which equal the spacing 47 and 48 between each additional frame member 19 and the two frame members 17 so that, when a number of roll pallets 10 with load-bearing decks 11 constructed in accordance with the invention are mounted on a further roll pallet 10 with a load-bearing deck 11 constructed in accordance with the invention and fitted with two side frames 15C, as shown in Figure 9, the frame members 17 of one of the side frames 15C are received in the outermost recesses 27A in the rim portions 12A of the stacked roll pallets 10 and the additional frame members 19 are received in the notches 44 formed in the rim portions 12A of the stacked roll pallets 10 and so do not foul the outer surfaces 12D of the rim portions 12A. The frame members 17 and additional frame members 19 of the other side frame (not shown in Figure 9) are similarly received in the corresponding recesses 27B and notches 44 formed in the further rim portions 12B of the stacked roll pallets 10, thereby ensuring that the stacked pallets 10 are securely positioned on the pallet 10 which is fitted with the two side frames 15C.

From reference to Figure 9, it is clear that side frame 15C differs from side frames 15A and 15B in that the cross-member 16 only extends between the inner locking bars 20B of two pairs of parallel locking bars 20A and 20B. Thus, the two frame members 17

which form extensions of the outer locking bars 20A are connected to the cross-member 16 by means of the retaining members 21 and cross-bars 21A which extend from the frame members 17 to locking bar extensions 20C which extend, respectively, from the inner locking bars 20B of each pair and are disposed on the opposite side of the axis of the cross-bar 16 to the locking bars 20A and 20B. This form of frame construction is advantageous in that the bending moments imposed on the frame members 17, which are at a maximum at the axis of the cross-member 16, are partly borne by the locking bar extensions 20C. This means that the frames 15C are less prone to failure as a result of excessive bending stresses in the frame members 17 adjacent the cross-members 16.

In the second embodiment of the invention illustrated in Figures 10 and 11, a roll pallet 10A is formed with lip means 25A and further lip means 25B along the rim portions 12A and 12B. However, in this case, these lip means 25A and 25B are not provided by the outer edge portions of grooves formed in the upper surfaces 12C and 12E of the rim portions 12A and 12B. In this case, the load-bearing surface 26 includes a planar portion 26A extending between the lip means 25A and the further lip means 25B.

A third load support 10B embodying the invention incorporates a modified deck 11C which, in part, is illustrated in Figure 12. This deck 11C is moulded from expanded polypropylene, structural foam material and has two modified reinforcement ribs 33A (only one of which is shown) which are not as deep as the other reinforcement ribs 33 and 34 or the additional ribs 36 supporting the apertured bosses 35. The apertured bosses 35 provided for securing the bracket parts 41 for the supporting wheels 13A, 13B, 14A and 14B at each end of the deck 11C are disposed on opposite sides of each modified reinforcement rib 33A so that the bracket parts 41 at opposite ends of each modified reinforcement rib 33A are able to clamp spaced portions of a steel reinforcement bar 42A against the underside of the modified reinforcement rib 33A. As shown, the reinforcement bar 42A is rectangular in cross-section and has the same thickness as the reinforcement rib 33A. Besides providing a neater appearance than a reinforcement member of channel or other structural section, this construction results in the formation of fewer dirt traps and can provide even greater strength and rigidity.

WHAT WE CLAIM IS:–

1. A load support (10, 10A or 10B), for co-operation with at least one removable side frame (15A) comprising:–

an elongate cross-member (16); and

at least one locking formation (20 and 21) having a first portion (20) extending along an axis which intersects the axis of the cross-member (16) and a second portion (21) which is radially spaced from the cross-member (16) and extends from the first portion (20) in a direction having at least a component which is parallel to the longitudinal direction of the cross-member (16);

characterised in that:–

the load support (10) comprises a deck (11) which has a load-bearing surface (26) and is formed, on at least one edge (11A), with a rim portion (12A) having an upper surface (12C) forming a marginal portion of the load-bearing surface (26) and an outer surface (12D) which faces away from the load-bearing surface (26);

locating means (25A) are formed in the upper surface (12C) of the rim portion (12A) for locating the cross-member (16) of one of said side frames (15A);

a recess (27A) formed in the rim portion (12A) extends from the load-bearing surface (26) for receiving at least the first portion (20) of the locking formation (20 and 21) of one of said side frames (15A) when the cross-member (16) of this side frame (15A is engaging the locating means (25A);

a rebate (28) is formed in one side of the recess (27A) so that, when the cross-member (16) of one of said side frames (15A) is engaging the locating means (25A) and this side frame (15A) is moved laterally by sliding the cross-member (16) of the side frame (15A) along the locating means (25A), the first portion (20) of the locking formation (20 and 21) of this side frame (15A) is able to move out of alignment with the recess (27A) and into the rebate (28) to thereby limit rotation of the side frame (15A) about the axis of the cross-member (16);

abutment means (29A) are formed in the rim portion (12A) so that, when the cross-member (16) of one of said side frames (15A) is engaging the locating means (25A) and the first portion (20) of the locking formation (20 and 21) of this side frame (15A) is positioned in the rebate (28) formed in the side of the recess (27A), the abutment means (29A) are co-operable with the second portion (21) of the locking formation (20 and 21) so as to prevent withdrawal of the first portion (20) of the locking formation (20 and 21) from the rebate (28) in a direction which is inclined to the axis of the second portion (21) of the locking formation (20 and 21); and

a releasable catch (22A) is provided so that, when the cross-member (16) of one of said side frames (15A) is engaging the locating means (25A) and the first portion (20) of the locking formation (20 and 21) of this

side frame (15A) is positioned in the rebate (28) formed in the side of the recess (27A), the releasable catch (22A) is capable of being put into and taken out of a locking condition in which it prevents lateral movement of this side frame (15A) by preventing the first portion (20) of the locking formation (20 and 21) of the side frame (15A) from being moved out of the rebate (28) and into alignment with the recess (27A).

2. A load support (10, 10A or 10B), according to Claim 1, characterised in that:–

the first and second portions of the locking formation (20 and 21) extend along non-collinear axes;

an extension (31) of the recess (27A) is formed in the rim portion (12A), on the opposite side of said recess (27A) to the rebate (28), and has an innermost surface (30);

a pin (24) projects from the innermost surface (30) of the extension (31); and

the releasable catch (22A) comprises a latch member (23) which is pivotally mounted for movement within the recess (27A) and the extension (31), about the pin (24), into and out of a locking position in which the latch member (23) is engageable with the first portion (20) of the locking formation (20 and 21) of a side frame (15A) mounted on the deck (11) and positioned so that the first portion (20) occupies the rebate (28) formed in the side of the recess (27A).

3. A load support (10, 10A or 10B), according to Claim 1 or Claim 2, for co-operation with at least one removable side frame (15A) comprising:–

a rectilinear cross-member (16);

at least one locking bar (20) extending along an axis which perpendicularly intersects the axis of the cross-member (16) so as to provide a first portion of a locking formation (20 and 21); and

a retaining member (21) extending laterally from said locking bar (20) along an axis lying in the plane defined by the axes of the cross-member (16) and said locking bar (20) so as to provide a second portion of the locking formation (20 and 21) which is radially spaced from the cross-member (16) and extends from said first portion in a direction having at least a component which is parallel to the axis of the cross-member (16);

characterised in that:–

the locating means (25A) extend rectilinearly along the upper surface (12C) of the rim portion (12A); and

the recess (27A) formed in the rim portion (12A) for receiving the locking bar (20) perpendicularly intersects the locating means (25A).

4. A load support (10, 10A or 10B), according to Claim 3, for co-operation with at least one removable side frame (15A) comprising:–

a rectilinear cross-member (16);

at least two locking bars (20) extending along spaced axes which perpendicularly intersect the axis of the cross-member (16) so that at least one of these locking bars (20) provides the first portion of a locking formation (20 and 21); and

a retaining member (21) extending laterally from the locking bar (20) providing the first portion of said locking formation (20 and 21) along an axis lying in the plane defined by the axes of the cross-member (16) and said locking bar (20) so as to provide a second portion of said locking formation (20 and 21) which is radially spaced from the cross-member (16) and extends from said first portion in a direction parallel to the axis of the cross-section (16);

characterised in that:–

recesses (27A), for receiving the locking bars (20) of one of said side frames (15A) when the cross-member (16) of this side frame (15A) is engaging the locating means (25A) are formed in the rim portion (12A) and perpendicularly interest intersect the locating means (25A);

a rebate (28) is formed in one side of each recess (27A) so that, when the cross-member (16) of one of said side frames (15A) engaging the locating means (25A) and this side frame (15A) is moved laterally by sliding the cross-member (16) of the side frame (15A) along the locating means (25A), the locking bars (20) of this side frame (15A) are able to move out of alignment with the recesses (27A) and into the rebates (28) to thereby limit rotation of the side frame (15A) about the axis of the cross-member (16);

the abutment means (29A) are co-operable with the or each retaining member (21), when the cross-member (16) of one of said side frames (15A) is engaging the locating means (25A) and the locking bars (20 of this side frame (15A) are positioned in the rebates (28) formed in the recesses (27A), to prevent axial withdrawal of the locking bars (20) from the rebates (28).

5. A load support (10, 10A or 10B), according to Claim 4, for co-operation with at least one side frame (15A) comprising:–

a rectilinear cross-member (16);

at least one pair of parallel locking bars (20) extending along spaced axes which perpendicularly intersect the axis of the cross-member (16) so as to provide, respectively, first portions of two locking formations (20 and 21); and

a retaining member (21) extending laterally between the locking bars (20) of the or each pair of locking bars (20) so as to provide, respectively, second portions of the two locking formations (20 and 21),

characterised in that:–

the abutment means (29A) formed on the rim portion (12A) for engagement with the or each retaining member (21) extend at least part-way between the recesses (27A) formed in the rim portion (12A) of the deck (11) for receiving the two locking bars (20) between which the retaining member (21) extends.

6. A load support (10, 10A or 10B) according to any preceding claim characterised in that the locating means comprise lip means (25A) which extend along said rim portion (12A) of the deck (11) for limiting movement of the cross-member (16) towards the outer surface (12D) of the rim portion (12A).

7. A load support (10), according to Claim 6, characterised in that:–

a groove (25C) is formed in the upper surface (12C) of the rim portion (12A) of the deck (11) for receiving the cross-member (16); and

the groove (25C) has at least one outer edge portion providing the lip means (25A).

8. A load support (10, 10A or 10B), according to any one of Claims 1 to 5, for co-operation with two removable side frames (15A and 15B) which each comprise:–

an elongate cross-member (16); and

at least one locking formation (20 and 21) having a first portion (20) extending along an axis which intersects the axis of the cross-member (16) and a second portion (21) which is radially spaced from the cross-member (16) and extends from the first portion (20) in a direction having at least a component which is parallel to the longitudinal direction of the cross-member (16),

characterised in that:–

the deck (11) is formed, on a further edge (11B) which is opposite said one edge (11A), with a further rim portion (12B) having an upper surface (12E) forming a marginal portion of the load-bearing surface (26) and an outer surface (12F) which faces away from the load-bearing surface (26);

further locating means (25B) are formed in the upper surface (12E) of the further rim portion (12B) for locating the cross-member (16) of one of said side frames (15B);

a further recess (27B) formed in the further rim portion (12B) extends from the load-bearing surface (26) for receiving at least the first portion (20) of the locking formation (20 and 21) of one of said side frames (15B) when the cross-member (16) of this side frame (15B) is engaging the further locating means (25B);

a rebate (28) is formed in one side of the further recess (27B) so that, when the cross-member (16) of one of said side frames (15B) is engaging the further locating means (25B) and this side frame (15B) is moved laterally by sliding the cross-member (16) of said side frame (15B) along said further locating means (25B), the first portion (20) of the locking formation (20 and 21) of this side frame (15B) is able to move out of alignment with the further recess (27B) and into the rebate (28) to thereby limit rotation of the side frame (15B) about the axis of the cross-member (16) of this side frame (15B);

further abutment means (29B) are formed in the further rim portion (12B) so that, when the cross-member (16) of one of said side frames (15B) is engaging the further locating means (25B) and the first portion (20) of the locking formation (20 and 21) of this side frame (15B) is positioned in the rebate (28) formed in the side of the further recess (27B), the further abutment means (29B) are co-operable with the second portion (21) of the locking formation (20 and 21) so as to prevent withdrawal of the first portion (20) of the locking formation (20 and 21) from the rebate (28) in a direction which is inclined to the axis of the first portion of the locking formation (20 and 21); and

a further releasable catch (22B) is provided so that, when the cross-member (16) of one of said side frames (15B) is engaging the further locating means (25B) and the first portion (20) of the locking formation (20 and 21) of this side frame (15B) is positioned in the rebate (28) formed in the side of the further recess (27B), the further releasable catch (22B) is capable of being put into and taken out of a locking condition in which it prevents lateral movement of this side frame (15B) by preventing the first portion (20) of the locking formation (20 and 21) of the side frame (15B) from being moved out of the rebate (28) and into alignment with the further recess (27B).

9. A load support (10, 10A or 10B), according to Claim 8, for co-operation with two removable side frames (15A and 15B) which each comprise:–

a rectilinear cross-member (16);

at least one locking bar (20) extending along an axis which perpendicularly intersects the axis of the cross-member (16) so as to provide a first portion (20) of a locking formation (20 and 21); and

a retaining member (21) extending laterally from said locking bar (20) along an axis lying in the plane defined by the axes of the cross-member (16) and said locking bar (20), so as to provide a second portion of the locking formation (20 and 21) which is radially spaced from the cross-member (16) and extends from said first portion in a direction having at least a component which is parallel to the axis of the cross-member (16),

characterised in that:–

the further location means (25B) extend rectilinearly along the upper surface (12E) of the further rim portion (12B); and

the further recess (27B) formed in the further rim portion (12B) for receiving the locking bar (20) of one of said side frames (15B) extends perpendicularly intersects the further location means (25B).

10. A load support (10, 10A or 10B), according to Claim 9, for co-operation with two removable side frames (15A and 15B) which each comprise:–

a rectilinear cross-member (16);

at least two parallel locking bars (20) extending along spaced axes which perpendicularly intersect the axis of the cross-member (16) so that at least one locking bar (20) provides a first portion of a locking formation (20 and 21);

a retaining member (21) extending laterally from said one of the locking bars (20) along an axis lying in the plane defined by the axes of the cross-member (16) and said one of the locking bars (20) so as to provide a second portion of said locking formation (20 and 21) which is radially spaced from the cross-member (16) and extends from the first portion in a direction parallel to the axes of the cross-member (16);

two frame members (17) which form extensions of said two locking bars (20) and are disposed on the opposite side of the cross-member (16) to the locking bars (20) on axes which are collinear with the axes of said two parallel locking bars (20); and

at least one additional frame member (19) extending parallel to said two frame members (17) along an axis which perpendicularly intersects the axis of the cross-member (16) and is disposed on the opposite side of the cross-member (16) to the locking bars (20),

characterised in that–

said rim portion (12A) on said one edge (11A) and said further rim portion (12B) on said further edge (11B) are both formed with notches (44) which are laterally spaced from the recesses (27A) and further recesses (27B) formed for receiving the two parallel locking bars (20) of two of said side frames (15A and 15B) by distances (45 and 46) which equal the spacing (47 and 48) between each additional frame member (19) of one of said side frames (15A or 15B) and said two frame members (17) of this side frame (15A or 15B), to which the additional frame member (19) is parallel.

11. A load support (10, 10A or 10B), according to any one of Claims 8 to 10, characterised in that the locating means and the further locating means respectively comprise lip means (25A) and further lip means (25B) which extend respectively along said rim portion (12A) and said further rim portion (12B) of the deck (11) for limiting movement of the cross-members (16) of the side frames (15A and 15B) towards the outer surface (12D) of the rim portion (12A) and the outer surface (12F) of the rim portion (12B), respectively.

12. A load support (10) according to Claim 11, characterised in that:–

two grooves (25C and 25D) are formed, respectively, in the upper surfaces (12C and 12E) of the rim portions (12A and 12B) of the deck (11) for receiving the cross-members (16) of the side frames (15A and 15B); and

each of the grooves (25C and 25D) has at least one edge portion providing the lip means (25A and 25B).

13. A load support (10A), according to Claim 11, characterised in that the load-bearing surface (26) includes a planar portion (26A) extending between the lip means (25A) and the further lip means (25B).

14. A load support (10, 10A or 10B), according to any preceding claim, characterised in that the deck (11) is moulded from plastics material and comprises:–

an upper layer (32), providing the load-bearing surface (26);

an integral rim (12) including the or each rim portion (12A and 12B) and having an inner surface (12G); and

intersecting reinforcement ribs (33 and 34) extending from the opposite side of the upper layer (32) to the load-bearing surface (26), between opposed parts of the inner surface (12G) of the rim (12).

15. A load support (10, 10A or 10B), according to Claim 14, characterised in that the underside of the deck (11) is formed with apertured bosses (35) and a screw-threaded member (38) is inserted into each apertured boss (35), each screw-threaded member (38) having an axially-facing surface (38A) disposed outside the aperture (37) formed in the apertured boss (35), into which it is inserted, for abutting engagement with a member (41 or 42) to be attached to the deck (11) by a complementary screw-threaded member (40).

16. A load support (10, 10A or 10B), according to Claim 15, characterised in that the screw-threaded member is an internally threaded bush (38) and the axially-facing surface (38A) is provided by one axil end of the bush (38).

17. A load support (10, 10A or 10B), according to Claim 15, characterised in that the axially-facing surface (38A) is provided on a flange (39) formed on each screw-threaded member (38) which is inserted into one of the apertured bosses (35).

18. A load support (10 or 10A), according to any one of Claims 15 to 17,

characterised in that:–

support means (13A, 13B, 14A and 14B) are attached to the deck (11) by screw-

threaded members (40) which are complementary to the screw-threaded members (38) inserted into the apertured bosses (35); and

the support means (13A, 13B, 14A and 14B) have parts (41) which are pressed into engagement with the axially-facing surfaces (38A) of the screw-threaded members (38) or which press reinforcement members (42) into engagement with the axially-facing surfaces (38A) of the screw-threaded members (38).

19. A load support (10B), according to any one of Claims 15 to 17.

characterised in that:–

the apertured bosses (35) are disposed on opposite sides of at least one reinforcement rib (33A);

a reinforcement member (42A) extends along the edge of the reinforcement rib (33A);

support means (13A and 13B, or 14A and 14B) are attached to the deck (11C) by screw threaded members (40) which are complementary to the screw-threaded members (38) inserted into the apertured bosses (35); and

the support means (13A and 13B, or 14A and 14B) have parts (41) which are pressed into engagement with the axially-facing surfaces (38A) of the screw-threaded members (38) and which clamp spaced portions of the reinforcement member (42A) against the edge of the reinforcement rib (33A).

20. An assembly comprising a load support (10, 10A or 10B), according to any preceding claim, and a removable side frame (15A or 15B), characterised in that the side frame (15A or 15B) comprises:–

an elongate cross-member (16) engaging the locating means (25A or 25B); and

at least one locking formation (20 and 21) having a first portion (20) extending along an axis which intersects the axis of the cross-member (16) and a second portion (21) which is radially spaced from the cross-member (16) and extends from the first portion (20) in a direction having at least a component which is parallel to the longitudinal direction of the cross-member (16).

21. An assembly comprising a load support (10, 10A or 10B), according to Claim 4, and a removable side frame (15A), characterised in that the side frame (15A) comprises:–

a rectilinear cross-member (16) engaging the locating means (25A);

at least two parallel locking bars (20) extending along spaced axes which perpendicularly intersect the axis of the cross-member (16) so as to provide, respectively, first portions of two locking formations (20 and 21);

two retaining members (21) extending laterally from the locking bars (20) so as to provide, respectively, second portions of the two locking formations (20 and 21); which are radially spaced from the cross-member (16) and extends from the first portions in the longitudinal direction of the cross-member (16); and

two frame members (17) which form extensions of the locking bars (20) and are disposed on the opposite side of the cross-member (16) to the locking bars (20) along axes which are collinear with the axes of said two parallel locking bars (20);

the cross-member (16) extending from one frame member (17) to the other.

22. An assembly comprising a load support (10, 10A or 10B), according to Claim 7, and a removable side frame (15C), characterised in that the side frame (15C) comprises:–

a rectilinear cross-member (16) engaging the locating means (25A or 25B);

at least two pairs of parallel locking bars (20A and 20B) extending along spaced axes which perpendicularly intersect the axis of the cross-member (16) so as to provide, respectively, first portions of four locking formations (20A, 20B and 21);

a retaining member (21) extending laterally between the locking bars (20A and 20B) of each pair of locking bars so as to provide, respectively, second portions of the four locking formations (20A, 20B and 21); which are radially spaced from the cross-member (16) and extends from the first portions in a direction having at least a component which is parallel to the longitudinal direction parallel to the axis of the cross-member (16);

two frame members (17) which form extensions of one locking bar (20A) of each of said pairs and are disposed on the opposite side of the cross-member (16) to the locking bars (20A and 20B) along axes which are collinear with the axes of one locking bar (20A) of each of said two pairs of parallel locking bars (20A and 20B);

two locking bar extensions (20C) which extend, respectively, from the other locking bar (20B) of each of said two pairs and are disposed on the opposite side of the cross-member (16) to the locking bars (20A and 20B) along axes which are collinear with the axes of the other locking bar (20B) of each of said two pairs of parallel locking bars (20A and 20B); and

cross-bars (21A) which extend between the free ends of the locking bar extensions (20C) and the adjacent frame members (17);

the cross-member (16) extending from one pair of locking bars (20A and 20B) to the other pair, but not between the locking bars (20A and 20B) of each pair.

23. An assembly, according to Claim 20

or Claim 21, characterised in that the locating means of the load support (10, 10A or 10B) comprise lip means (25A) which extend along said rim portion (12A) of the deck (11) for limiting movement of the cross-member (16) of the side frame (15A or 15C) towards the outer surface (12D) of the rim portion (12A).

24. An assembly, according to Claim 22, characterised in that:–

a groove (25C) is formed in the upper surface (12C) of the rim portion (12A) of the deck (11) for receiving the cross-member (16); and

the groove (25C) has at least one outer edge portion providing the lip means (25A).

25. A load support, for co-operation with at least one removable side frame, substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.

26. An assembly comprising a load support and at least one removable side frame, substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.

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Sheet 1

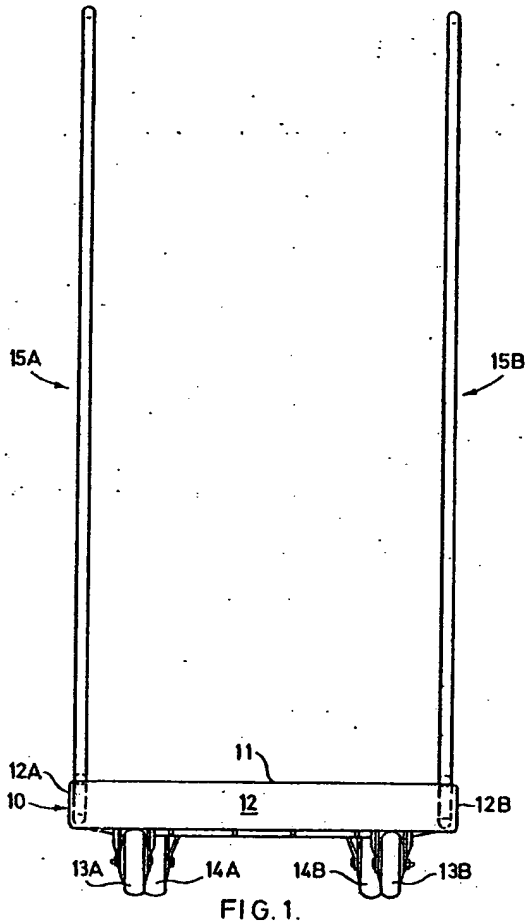

FIG. 1.

1595210 COMPLETE SPECIFICATION
10 SHEETS *This drawing is a reproduction of the Original on a reduced scale*
Sheet 2

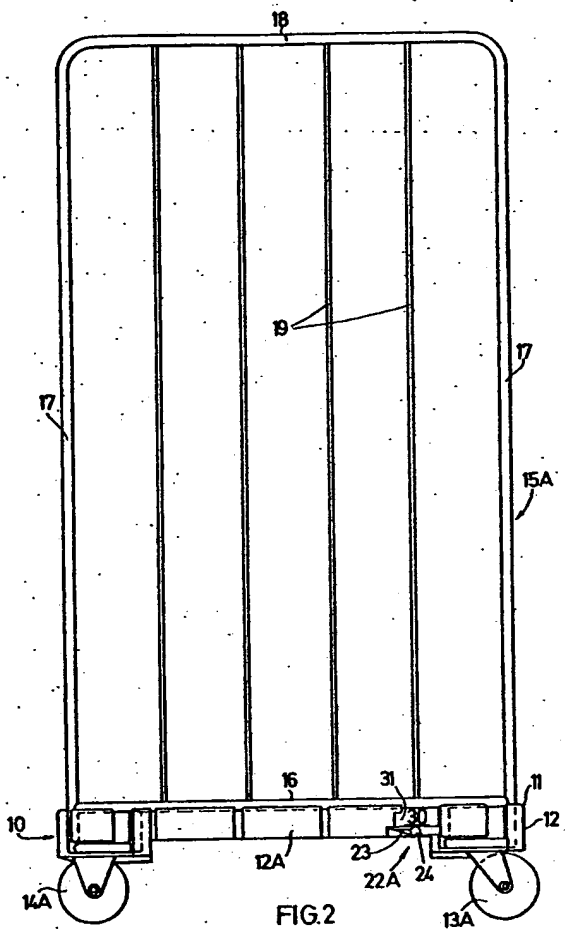

FIG.2

1595210 COMPLETE SPECIFICATION
10 SHEETS *This drawing is a reproduction of the Original on a reduced scale*
Sheet 3

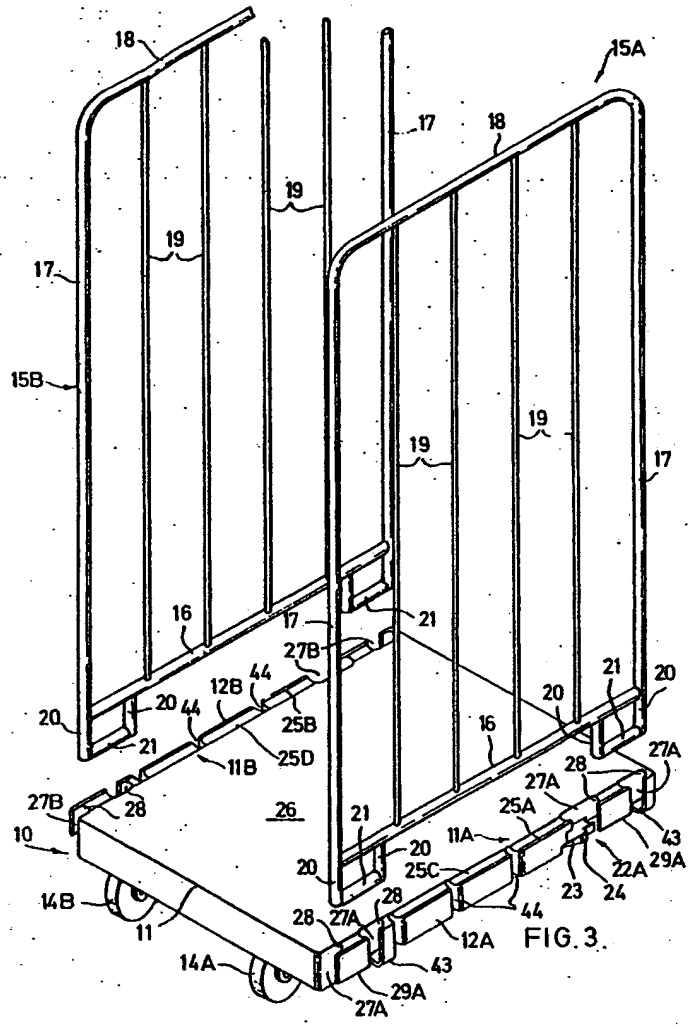

FIG. 3.

1595210
10 SHEETS

COMPLETE SPECIFICATION

This drawing is a reproduction of the Original on a reduced scale

Sheet 4

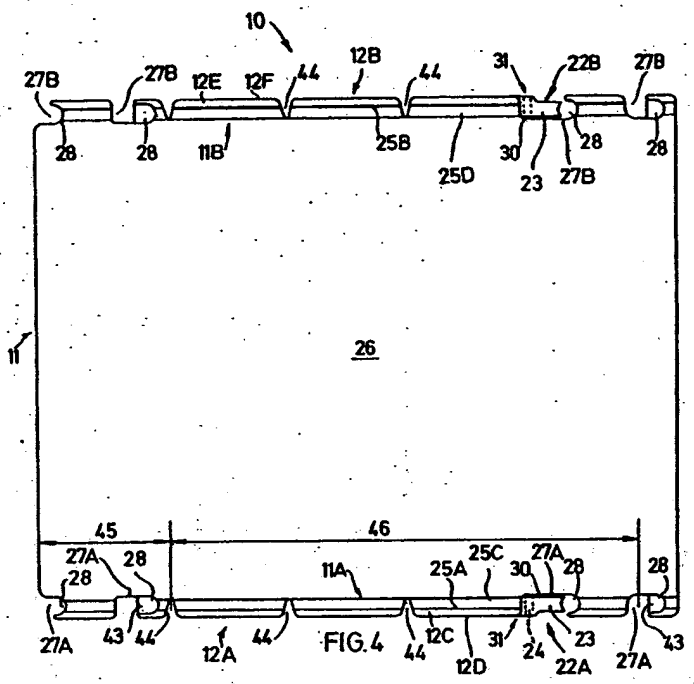

FIG. 4

1595210 COMPLETE SPECIFICATION
10 SHEETS *This drawing is a reproduction of the Original on a reduced scale*
Sheet 5

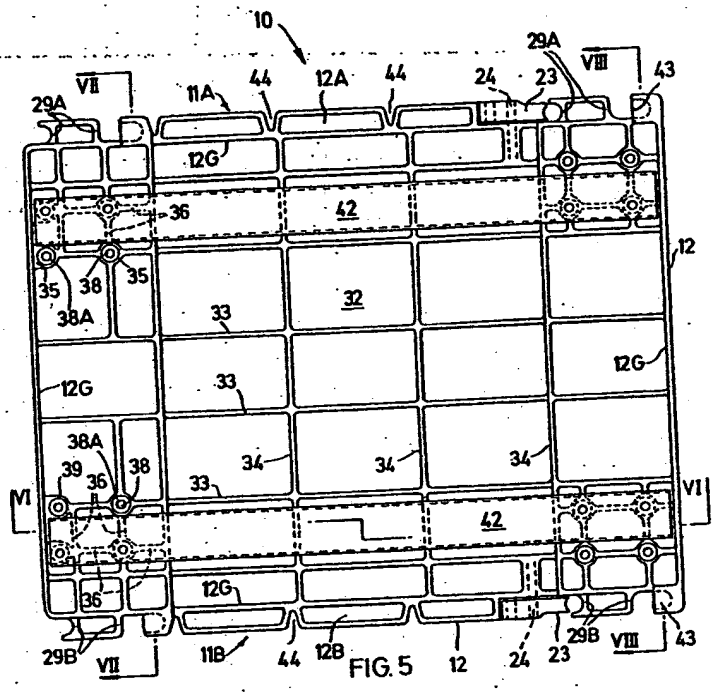

FIG. 5

1595210 COMPLETE SPECIFICATION
10 SHEETS *This drawing is a reproduction of the Original on a reduced scale*
Sheet 6

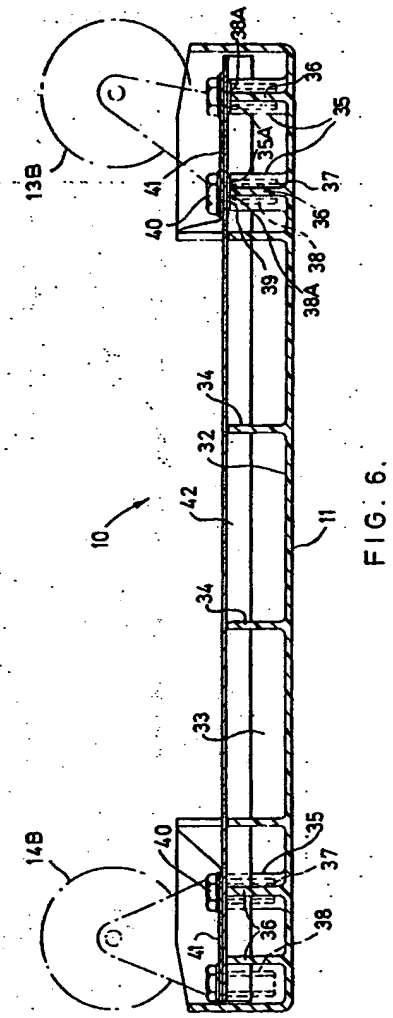

FIG. 6.

1595210 COMPLETE SPECIFICATION
10 SHEETS *This drawing is a reproduction of the Original on a reduced scale*
Sheet 7

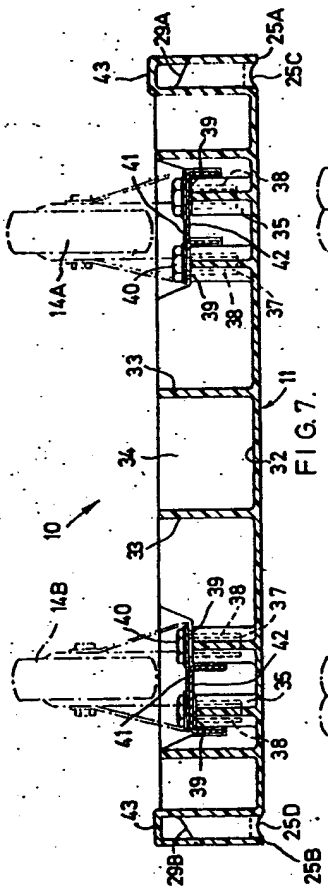

FIG. 7.

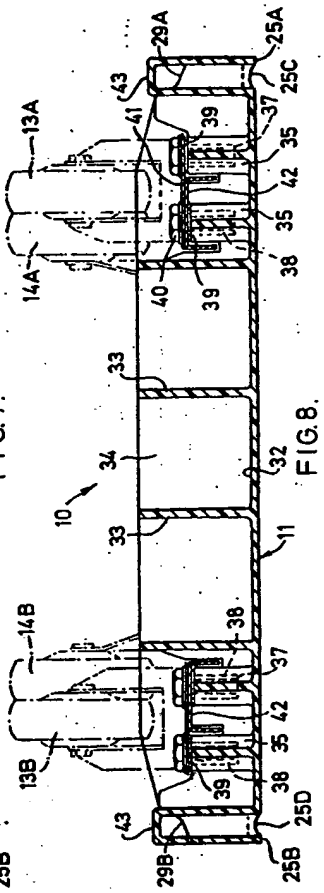

FIG. 8.

1595210 COMPLETE SPECIFICATION
10 SHEETS *This drawing is a reproduction of the Original on a reduced scale*
Sheet 8

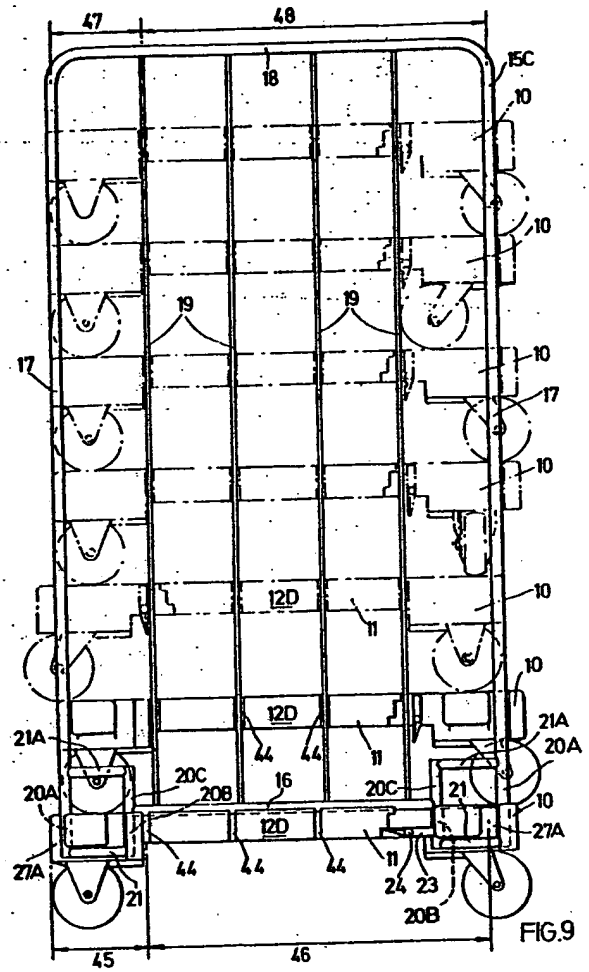

FIG.9

1595210 COMPLETE SPECIFICATION
10 SHEETS *This drawing is a reproduction of the Original on a reduced scale*
Sheet 9

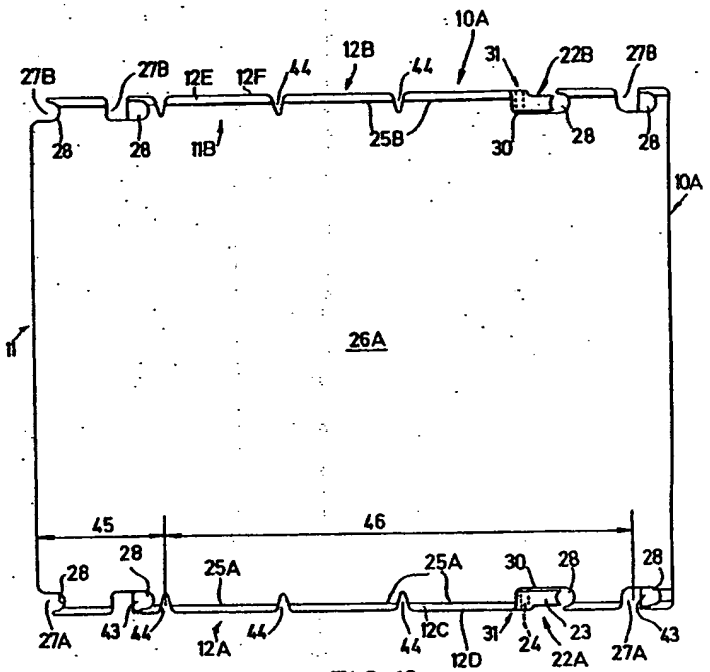

FIG. 10.

1595210 COMPLETE SPECIFICATION
10 SHEETS *This drawing is a reproduction of the Original on a reduced scale*
Sheet 10

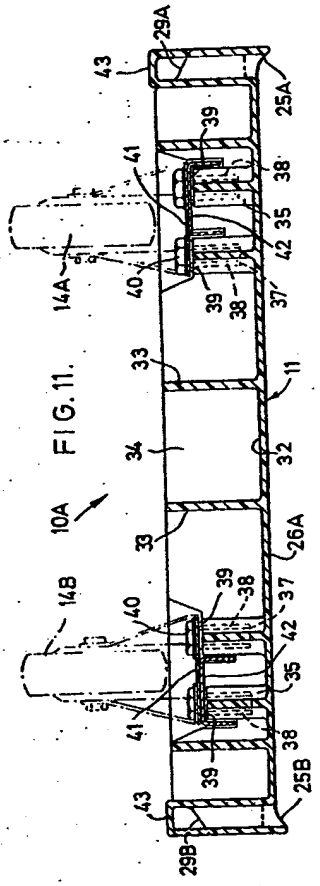

FIG. 11.

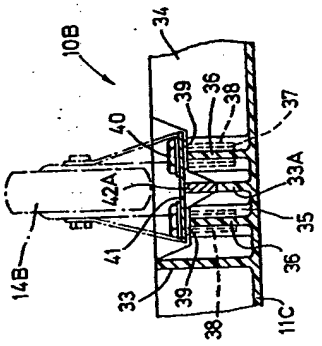

FIG. 12.